

Notice of Allowability

Application No.

10/725,403

Examiner

Rakesh K. Dhingra

Applicant(s)

NAKAYAMA ET AL.

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's amendment dt. 6/21/06.
2. ☒ The allowed claim(s) is/are 2-7, 9-15 and 17.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Rakesh K. Dhingra

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EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Damond E. Vadnais on 8/23/06.

The application has been amended as follows:

In the Claims:

Claim 9 (Currently Amended): A plasma processing apparatus comprising:
a vacuum chamber that accommodates an object to be processed, and provides a plasma process to the object in a vacuum or reduced pressure environment;
a dielectric for transmitting microwaves to said vacuum chamber and for maintaining the vacuum or reduced environment of said vacuum chamber;
a plate that has slots for guiding the microwaves to said dielectric; and
a temperature control mechanism that has a cooling channel between said plate and said dielectric, and controls temperature of said dielectric,
wherein the cooling channel comprises a heat conductive medium therein, and
wherein the heat conductive medium is arranged on the surface of said dielectric, on a peripheral portion of said dielectric in a ring shape so as not to close the slots in the plate.

Claim 17 (Currently Amended): A plasma processing apparatus comprising:

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a vacuum chamber that accommodates an object to be processed, and provides a plasma process to the object in a vacuum or reduced pressure environment;

a dielectric for transmitting microwaves to said vacuum chamber and for maintaining the vacuum or reduced environment of said vacuum chamber;

a plate that has slots for guiding the microwaves to said dielectric; and

a temperature control mechanism that has a cooling channel between said plate and said dielectric, and controls temperature of said dielectric, wherein the cooling channel is supplied with coolant;

a waveguide for guiding the microwaves to said plate, wherein plural holes are formed in a part of said waveguide, such that the coolant is allowed to pass through the holes and such that the microwaves are prevented from transmitting through the holes; and

a partition, formed on said waveguide between the part of said waveguide having the holes and a microwave source for supplying the microwaves, for preventing the coolant from moving along said waveguide to the microwave source, wherein the partition is made of a high dielectric loss material.

Allowable Subject Matter

Claims 9, 2-7, 10-15 and 17 allowed.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Regarding Claim 9: Closest prior art (Yamazaki et al – US Patent No. 6,059,922) does not teach claim limitation interalia, "a plate that has slots for guiding the microwaves to said dielectric; and

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a temperature control mechanism that has a cooling channel between said plate and said dielectric, and controls temperature of said dielectric, wherein the cooling channel comprises a heat conductive medium therein, and wherein the heat conductive medium is arranged on the surface of said dielectric, on a peripheral portion of said dielectric in a ring shape so as not to close the slots in the plate."

Regarding Claim 17: Closest prior art (JP 2-302507) does not teach claim limitation interalia, a partition, formed on said waveguide between the part of said waveguide having the holes and a microwave source for supplying the microwaves, for preventing the coolant from moving along said waveguide to the microwave source, wherein the partition is made of a high dielectric loss material.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rakesh Dhingra



Parviz Hassanzadeh
Supervisory Patent Examiner
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